Environmental Profile

This LCA is calculated according to: ISO 14044, ISO 14040 and EN 15804

Ecochain v3.5.80

Product:	3021211 - PVC KGFix Branch 45° GY 250X160 SN4 S/SP
Unit:	1 piece
Manufacturer:	Wavin - NL - Hardenberg - Verified
Address:	J.C. Kellerlaan 3 7772 SG Hardenberg Netherlands

The Wavin KG sewer pipes and fittings are suitable for drain and underground sewer applications. This easy push-fit rubber ring jointing system is durable, corrosion free and light weight.

LCA standard:	NMD Bepalingsmethode 1.1 (2022)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	08-06-2023
End of validity:	08-06-2028
Verifier:	Martijn van Hövell - SGS Search

This LCA was evaluated according to EN15804+A2. It was concluded that the LCA complies with this standard.

The LCA background information and project dossier have been registered in the online Ecochain application in the account Wavin - NL - Hardenberg - Verified (2020). (☑ = module declared, MND = module not declared).

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
☑	☑	☑	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	☑	☑	☑	☑

Product stage

A1 Raw material supply A2 Transport A3 Manufacturing

Construction process stage

A4 Transport gate to site
A5 Assembly / Construction installation process

Use stage

B1 Use B2 Maintenance B3 Repair B4 Replacement B5 Refurbishment
B6 Operational energy use B7 Operational water use

End-of-Life stage

C1 De-construction demolition C2 Transport C3 Waste processing
C4 Disposal

Benefits and loads beyond the system boundaries

D Reuse- Recovery- Recycling- potential

Environmental impacts and parameters

ECI = Environmental Costs Indicator [euro]; **ADPE** = Abiotic depletion potential for non-fossil resources [kg Sb-eq]; **ADPF** = Abiotic depletion potential for fossil resources [kg Sb-eq]; **GWP** = Global warming potential [kg CO2-eq]; **ODP** = Depletion potential of the stratospheric ozone layer [kg CFC-11-eq]; **POCP** = Formation potential of tropospheric ozone photochemical oxidants [kg ethene-eq]; **AP** = Acidification potential of land and water [kg SO2-eq]; **EP** = Eutrophication potential [kg PO4 3−-eq]; **HTP** = Human toxicity potential [kg 1,4-DB-eq]; **FAETP** = Freshwater aquatic ecotoxicity potential [kg 1,4-DB-eq]; **MAETP** = Marine aquatic ecotoxicity potential [kg 1,4-DB-eq]; **TETP** = Terrestrial ecotoxicity potential [kg 1,4-DB-eq]; **GWP-total** = EF EN15804+A2 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF EN15804+A2 Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF EN15804+A2 Climate Change - Land use and LU change [kg CO2 eq]; **ODP** = EF Ozone depletion [kg CFC11 eq]; **AP** = EF Acidification [mol H+ eq]; **EP-fw** = EF Eutrophication, freshwater [kg P eq]; **EP-m** = EF Eutrophication, marine [kg N eq]; **EP-T** = EF Eutrophication, terrestrial [mol N eq]; **POCP** = EF Photochemical ozone formation [kg NMVOC eq]; **ADP-mm** = EF Resource use, minerals and metals [kg Sb eq]; **ADP-f** = EF Resource use, fossils [MJ]; **WDP** = EF Water use [m3 depriv.]; **PM** = EF Particulate matter [disease inc.]; **IR** = EF Ionising radiation [kBq U-235 eq]; **ETP-fw** = EF Ecotoxicity, freshwater [CTUe]; **HTP-c** = EF Human toxicity, cancer [CTUh]; **HTP-nc** = EF Human toxicity, non-cancer [CTUh]; **SQP** = EF Land use [Pt]; **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ]; **PERM** = Use of renewable primary energy resources used as raw materials [MJ]; **PERT** = Total use of renewable primary energy resources [MJ]; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [MJ]; **PENRM** = Use of non-renewable primary energy resources used as raw materials [MJ]; **PENRT** = Total use of non-renewable primary energy resources [MJ]; **PET** = Total energy [MJ]; **SM** = Use of secondary material [kg]; **RSF** = Use of renewable secondary fuels [MJ]; **NRSF** = Use of non-renewable secondary fuels [MJ]; **FW** = Use of net fresh water [m3]; **HWD** = Hazardous waste disposed [kg]; **NHWD** = Non-hazardous waste disposed [kg]; **RWD** = Radioactive waste disposed [kg]; **CRU** = Components for re-use [kg]; **MFR** = Materials for recycling [kg]; **MER** = Materials for energy recovery [kg]; **EE** = Exported energy [MJ]; **EET** = Exported energy thermic [MJ]; **EEE** = Exported energy electric [MJ]

Statement of Confidentiality

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	1.05	0.01	0.05	1.11	0.01	0.33	0	-0.49	0.96
ADPE	kg Sb-eq	8.47E-3	3.08E-6	1.28E-5	8.49E-3	2.78E-6	2.51E-5	3.18E-8	-1.03E-4	8.41E-3
ADPF	kg Sb-eq	1.07E-1	8.85E-4	2.20E-3	1.10E-1	7.83E-4	8.63E-3	4.41E-5	-5.57E-2	6.34E-2
GWP	kg CO2-eq	9.10E+0	1.20E-1	4.17E-1	9.63E+0	1.07E-1	3.45E+0	3.05E-2	-4.86E+0	8.37E+0
ODP	kg CFC-11-eq	4.68E-6	2.14E-8	3.30E-8	4.73E-6	1.98E-8	3.60E-7	1.05E-9	-2.34E-6	2.78E-6
POCP	kg ethene-eq	5.48E-3	7.26E-5	1.81E-4	5.73E-3	6.40E-5	6.88E-4	7.86E-6	-2.48E-3	4.01E-3
AP	kg SO2-eq	3.91E-2	5.29E-4	1.79E-3	4.14E-2	4.59E-4	5.09E-3	2.37E-5	-1.64E-2	3.07E-2
EP	kg PO4 3−-eq	5.28E-3	1.04E-4	2.31E-4	5.61E-3	9.17E-5	7.84E-4	1.02E-5	-2.31E-3	4.19E-3
HTP	kg 1,4-DB-eq	3.61E+0	5.07E-2	1.94E-1	3.86E+0	4.56E-2	1.31E+0	2.49E-3	-1.55E+0	3.67E+0
FAETP	kg 1,4-DB-eq	1.79E-1	1.48E-3	6.62E-3	1.87E-1	1.34E-3	2.00E-2	7.65E-4	-4.67E-2	1.62E-1
MAETP	kg 1,4-DB-eq	2.57E+2	5.32E+0	2.61E+1	2.89E+2	4.77E+0	6.96E+1	9.33E-1	-1.00E+2	2.64E+2
TETP	kg 1,4-DB-eq	4.15E-2	1.79E-4	1.44E-2	5.61E-2	1.62E-4	4.66E-3	8.40E-6	-1.56E-2	4.53E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	8.84E+0	1.22E-1	4.78E-1	9.44E+0	1.08E-1	4.00E+0	3.56E-2	-4.42E+0	9.16E+0
GWP-f	kg CO2 eq	9.29E+0	1.21E-1	3.67E-1	9.78E+0	1.08E-1	3.47E+0	3.56E-2	-4.96E+0	8.43E+0
GWP-b	kg CO2 eq	-4.65E-1	5.60E-5	7.57E-2	-3.89E-1	6.53E-5	5.29E-1	4.44E-5	5.42E-1	6.82E-1
GWP-luluc	kg CO2 eq	1.92E-2	4.45E-5	3.48E-2	5.41E-2	3.81E-5	1.33E-3	9.18E-7	-6.91E-3	4.85E-2
ODP	kg CFC11 eq	4.64E-6	2.68E-8	3.88E-8	4.71E-6	2.48E-8	3.71E-7	1.30E-9	-2.32E-6	2.79E-6
AP	mol H+ eq	4.75E-2	7.04E-4	2.24E-3	5.05E-2	6.13E-4	6.39E-3	3.18E-5	-1.98E-2	3.77E-2
EP-fw	kg P eq	5.11E-4	1.22E-6	6.43E-6	5.19E-4	8.85E-7	4.47E-5	4.16E-8	-2.16E-4	3.49E-4
EP-m	kg N eq	8.51E-3	2.48E-4	5.28E-4	9.29E-3	2.19E-4	1.58E-3	2.17E-5	-3.60E-3	7.51E-3
EP-T	mol N eq	9.05E-2	2.74E-3	5.83E-3	9.90E-2	2.42E-3	1.74E-2	1.27E-4	-3.89E-2	8.01E-2
POCP	kg NMVOC eq	2.85E-2	7.81E-4	1.66E-3	3.10E-2	6.91E-4	5.20E-3	4.37E-5	-1.28E-2	2.41E-2
ADP-mm	kg Sb eq	8.47E-3	3.08E-6	1.28E-5	8.49E-3	2.78E-6	2.51E-5	3.18E-8	-1.03E-4	8.41E-3
ADP-f	MJ	2.25E+2	1.83E+0	4.10E+0	2.31E+2	1.65E+0	1.71E+1	9.53E-2	-1.17E+2	1.32E+2
WDP	m3 depriv.	1.45E+1	6.55E-3	3.17E+0	1.77E+1	5.07E-3	6.75E-1	6.09E-4	-7.30E+0	1.11E+1
PM	disease inc.	3.50E-7	1.09E-8	2.76E-8	3.88E-7	9.71E-9	7.87E-8	6.56E-10	-1.63E-7	3.15E-7
IR	kBq U-235 eq	5.30E-1	7.67E-3	6.52E-3	5.44E-1	7.22E-3	6.05E-2	4.39E-4	-2.46E-1	3.66E-1
ETP-fw	CTUe	2.43E+2	1.63E+0	9.53E+0	2.54E+2	1.34E+0	1.32E+2	1.46E+0	-1.06E+2	2.83E+2
HTP-c	CTUh	7.37E-9	5.30E-11	3.30E-10	7.75E-9	4.77E-11	1.90E-9	2.63E-12	-2.72E-9	6.98E-9
HTP-nc	CTUh	2.42E-7	1.79E-9	1.03E-8	2.54E-7	1.60E-9	4.60E-8	2.81E-10	-9.37E-8	2.08E-7
SQP	Pt	6.04E+1	1.59E+0	3.07E-1	6.22E+1	1.41E+0	1.04E+1	2.44E-1	-1.14E+2	-4.02E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.83E+1	2.29E-2	1.99E+1	3.83E+1	2.37E-2	1.23E+0	3.60E-3	-2.34E+1	1.62E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.83E+1	2.29E-2	1.99E+1	3.83E+1	2.37E-2	1.23E+0	3.60E-3	-2.34E+1	1.62E+1
PENRE	MJ	2.41E+2	1.94E+0	4.43E+0	2.47E+2	1.75E+0	1.82E+1	1.01E-1	-1.26E+2	1.41E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.41E+2	1.94E+0	4.43E+0	2.47E+2	1.75E+0	1.82E+1	1.01E-1	-1.26E+2	1.41E+2
PET	MJ	2.59E+2	1.97E+0	2.44E+1	2.86E+2	1.78E+0	1.94E+1	1.05E-1	-1.50E+2	1.57E+2
SM	kg	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m3	1.80E-1	2.23E-4	7.50E-2	2.55E-1	1.87E-4	1.90E-2	1.17E-4	-8.93E-2	1.85E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.20E-3	4.64E-6	4.36E-6	1.21E-3	4.22E-6	2.84E-5	1.16E-7	-1.01E-4	1.14E-3
NHWD	kg	9.39E-1	1.16E-1	6.73E-3	1.06E+0	1.02E-1	6.26E-1	4.19E-1	-3.92E-1	1.82E+0
RWD	kg	4.84E-4	1.20E-5	8.07E-6	5.05E-4	1.12E-5	6.51E-5	6.20E-7	-2.21E-4	3.61E-4
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EE	MJ	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0

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